Effort Overview/Status

ECC Ozone Sonde Calibration System

Code 589

Effort Lead:	Frank Schmidlin/972
Development:	Tony Baldwin/589,
Customer:	Frank Schmidlin /972

ECC Cells - Electrochemical Concentration Cell

Pump Efficiency - Pump characteristics in a vacuum

Ozonesondes

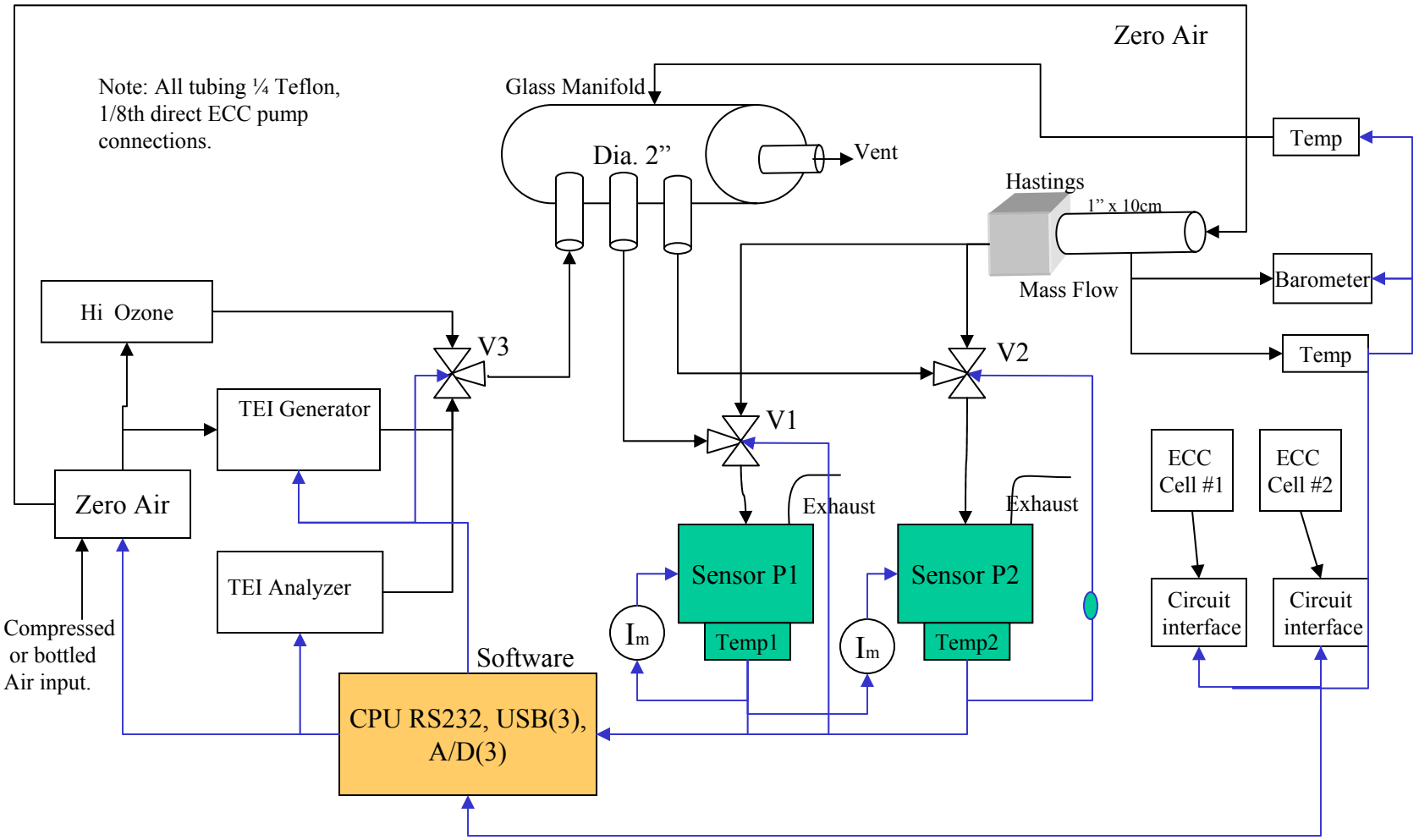
The ECC Ozonesondes was develop as a light-weight, balloon-borne instrument for measuring vertical profiles of atmospheric ozone. The atmospheric ozone concentration is calculated from the sampling-pump flowrate and the current flow during the electrochemical process, the converting of molecular iodine back to the ionic form.

There are two critical elements we are addressing in this system:

1. The pump flowrate changes as the Sonde ascends (air density reduction).

2. The cell calibration and response to ozone. Or more precisely, the amount of current flow per part per billion of ozone.

Functional Diagram Of ECC Automated Calibration System



12/12/03 TB

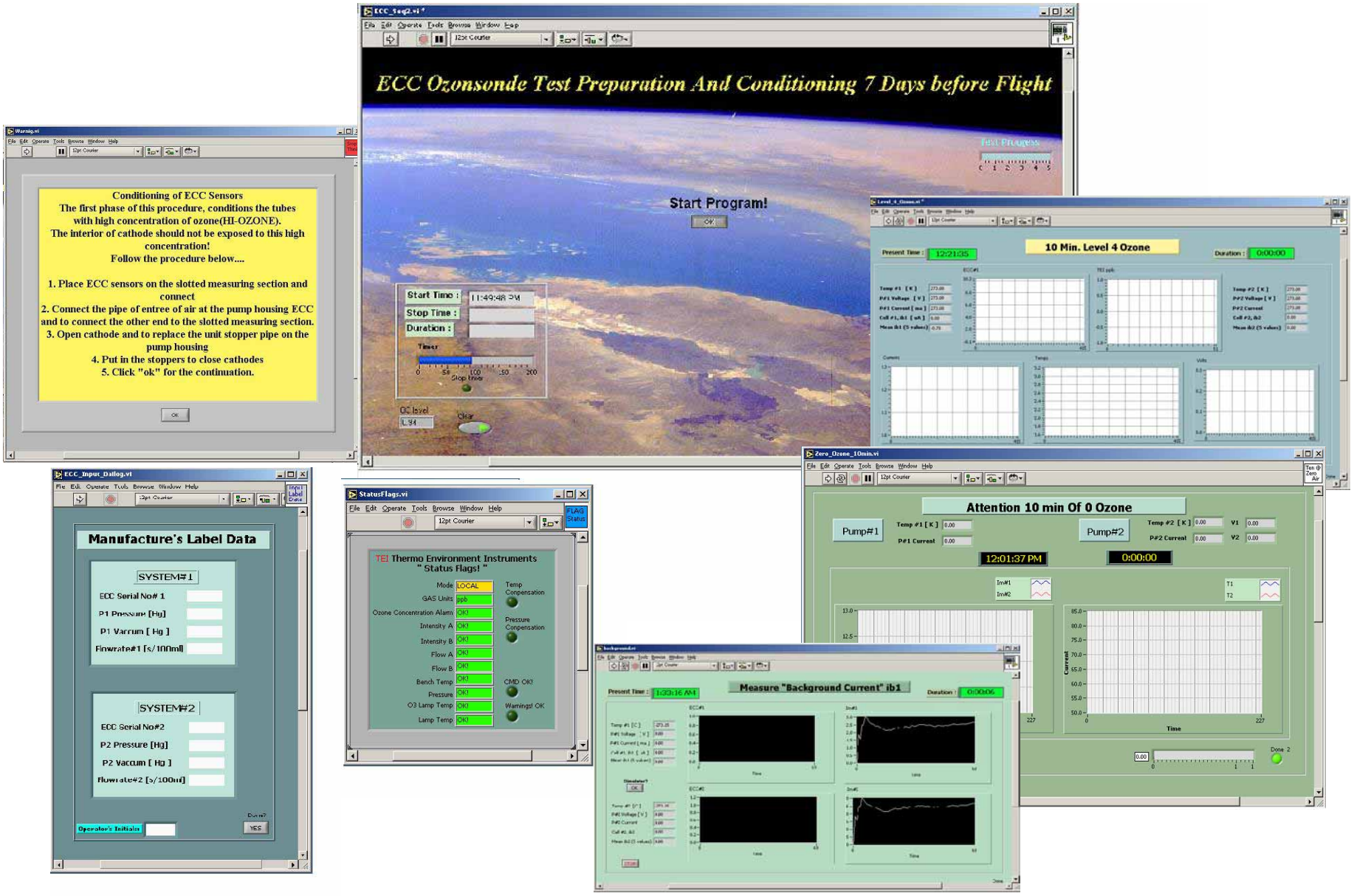
Critical design Elements

Major milestones:

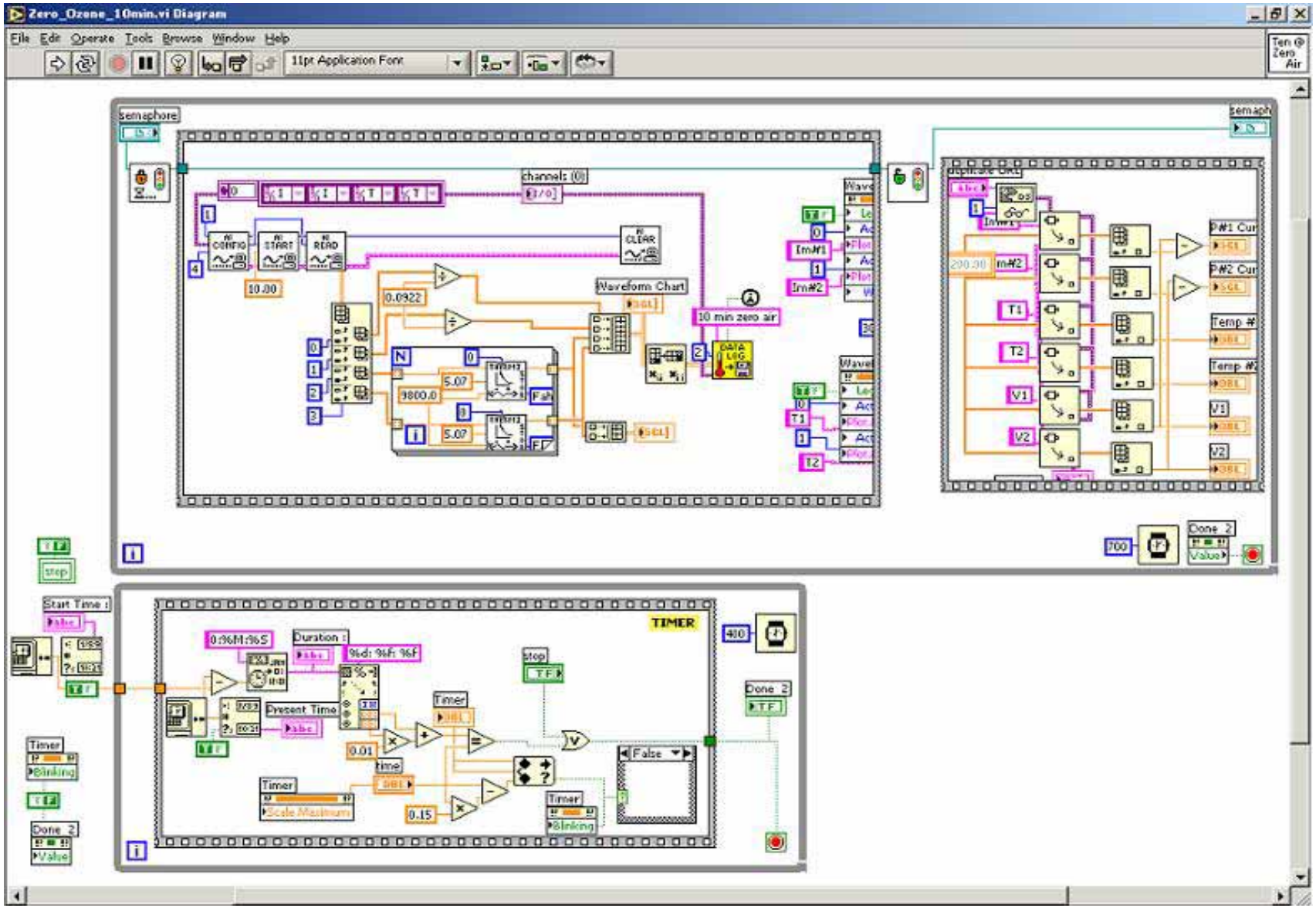
1. Acquisition Board 1/04
2. An Interface with Isolation to sensors 1/04
3. System architecture 12/03
4. Teflon solenoid valves, Three way
5. Glass manifold
6. Software choice, Labview 12/03
7. Sensors: Thermisters, Barometer, Mass-air flow meter, Voltage & current sensors.

Putting it all together!

Software Development ⟶ Hardware Interface



Software Scheme ⟶ Strategic Implementation

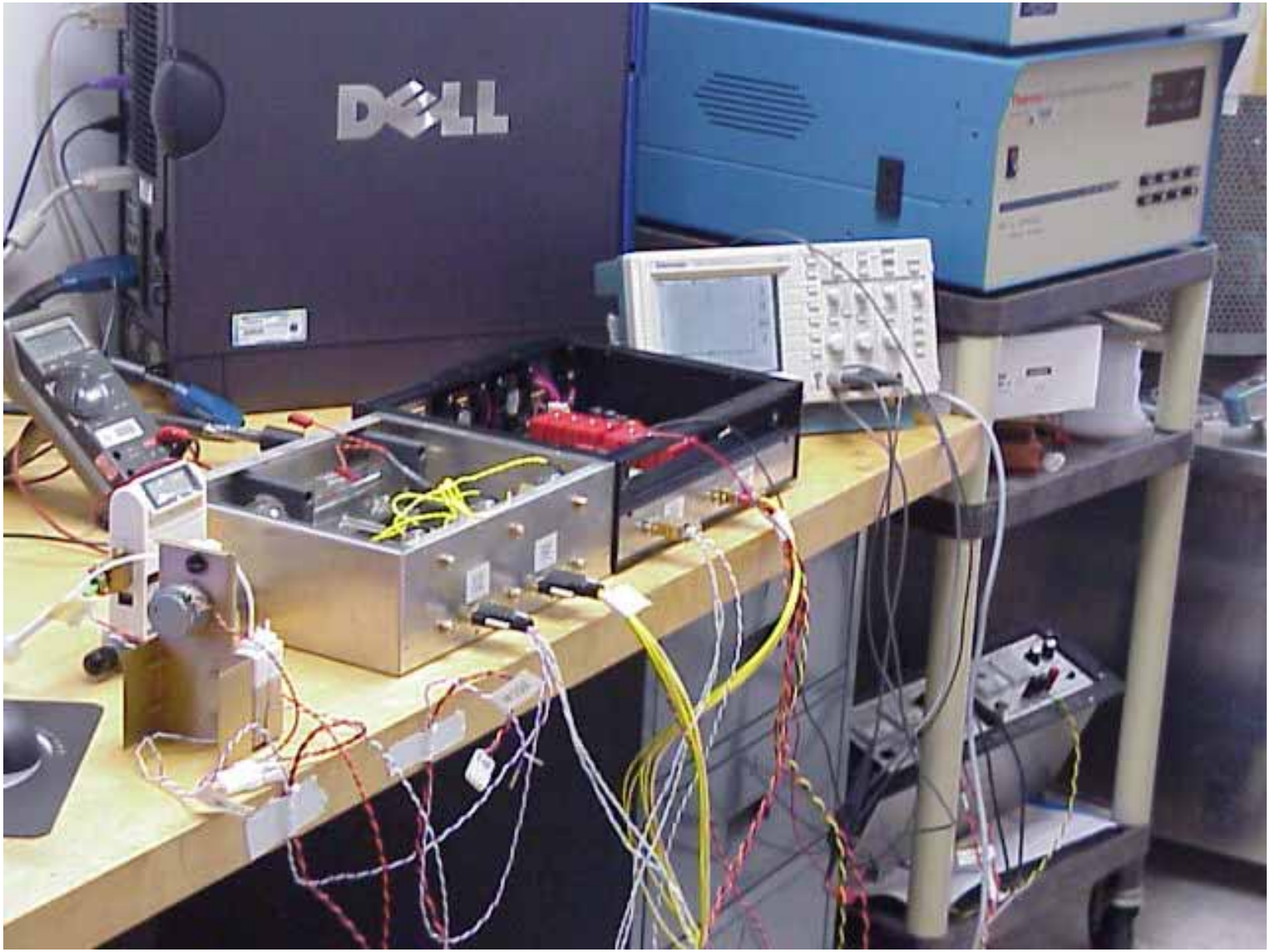


Cost of system without labor and consultant cost

		ECC Calibration Automated System Parts list. (Part A)			
Part No#	**Model No#**	**Descriptions**	**Qty**	**Ea.**	**Total**
777744-01	NI PCI-6025E	NI PCI-6025E PCI 16 SE/8 DI, 200 kS/s, 12 bits, +/-10 V, 100pin	1	$ 695	$ 695.00
778192-01	SC-2311	Signal Conditioning with/Configurable Connectors, US 120	1	$ 795	$ 795.00
					$ -
776233-P2	5B34	Type P, 100 ohm platinum, 0 to 100 degrees C	0	$ 150	$ -
778016-04	5B36	5B36 Potentiometer Input Module, 0 to 10k Ohms (need 4)	0	$ 205	$ -
776228-10	5B30	100mv,+/- 10mV, 4 Hz bandwidth	0	$ 150	$ -
776241-01	SSR-ODC5	Output Module, 3 to 60 VDC	8	$ 12	$ 96.00
Accessories					$ -
182849-02	SH1006868	SH1006868 Shielded Cable, 2 m, (100 to 68 pin)	1	$ 195	$ 195.00
					$ -
					$ -
PTB100A	Barometer	PTB100A/ 800-1060 hPa, +/- 0.3 hPa, (0 – 5 vdc)	1	?	$ 1.00
	Thermisters	Thermisters 0 to 100F (bead thermisters)	4	?	$ 4.00
Model:					$ -
	Hastings	ENALU- 500X, U500m – 0 – 300 SCCM, +/- 0.03% SCCM			$ -
		HS500m, 0-300 SCCM, 0-5vdc output, (100ml) +/- 0.2sec/100ml	1	$2,255	$2,255.00
		Monel , Rack mount			
		Signal conditioner and power supply	1	$1,620	$1,620.00
	Cable	8ft length	1	$ 175	$ 175.00
					$ -
018-0221-900	Parker Valves	2 way, NC, .125' Orifice, 24vdc, ¼-28 Ports, 2 Solenoids	3	$ 294	$ 882.00
		10 psi Max., Teflon only for gas contact.			$ -
		Parker's National Number (1-800-272-7537)			$ -
		Vaisala 1-888-824-7252			
				Total	$6,718.00

Planned Accomplishments (Next 3 Months)

- Design Review by Dr.Bruno Hoegger (consultant from Swiss), Pam Pitman 8/31-9/10.
- Vacuum control interface fabrication integration 9/13- 9/24.
- Software integration and Math algorithm Review pump efficiency.
- ECC cell calibration section complete 9/24.
- Vacuum design review 9/27.
- Vacuum and pump section ready for full functional testing by 10/1.
- Hard date for total system completion the first week of November.


DELL


DELL